

Notice of Allowability

Application No.

10/710,678

Examiner

Thai-Ba Trieu

Applicant(s)

SUN ET AL.

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Amendment filed 09/07/2006.
2. ☒ The allowed claim(s) is/are 1-3,6-8,10-23 and 25.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

This Office action is in response to the Amendment filed on September 07, 2006. Applicant's cooperation in amending the claims to overcome the claim objections relating to informalities is appreciated.

Claims 12, 19, and 22 were amended.

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance: The prior art fails to disclose the claimed combination of a method for controlling an internal combustion engine having a two-stage turbocharger and a system for turbo-charging an internal combustion engine including:

Regarding claim 1:

operating the turbochargers in a series configuration for a first operating region by selectively connecting an outlet of the first turbine to an inlet of the second turbine; and

operating the turbochargers in a parallel configuration for a second operating region by decoupling an outlet of the second compressor from an inlet of the first compressor and coupling the outlet of the second compressor to an intake manifold of the internal combustion engine.

Regarding claim 7:

supplying a portion of exhaust gas to an inlet of the first compressor and outlet of the second compressor when operating in the series configuration; and

supplying a portion of the exhaust gas to the outlet of the second compressor only when operating in the parallel configuration.

Regarding claim 12:

a controller in communication with the plurality of flow control devices, the controller selectively actuating the plurality of flow control devices to operate the first and second turbochargers in one of a series configuration and a parallel configuration based on current operating conditions to supply a portion of exhaust gas to an inlet of the first compressor and outlet of the second compressor when operating in the series configuration and to supply a portion of the exhaust gas only to the outlet of the second compressor when operating in the parallel configuration.

Regarding claim 13:

a controller in communication with the plurality of flow control devices and the at least one EGR valve, the controller selectively actuating the plurality of flow control devices to operate the first and second turbochargers in one of a series configuration and a parallel configuration based on current operating conditions and selectively actuating the EGR valve in combination with at least one of the plurality of flow control devices to supply a portion of exhaust gas to an inlet of the first compressor when operating the turbochargers in the series configuration and to an outlet of the second compressor when operating the turbochargers in the parallel configuration.

Regarding claim 19:

a controller in communication with the plurality of flow control devices, the controller selectively actuating the plurality of flow control devices to operate the first and second turbochargers in one of a series configuration, where the outlet of one turbine is coupled to the inlet of another turbine and/or the outlet of one compressor is coupled to the inlet of another compressor and a parallel configuration, where both compressors have inlets coupled to atmosphere and/or both turbines are connected to a common exhaust, based on current operating conditions, wherein the controller actuates the plurality of flow control devices to selectively couple an outlet of the second compressor to an inlet of the first compressor and to selectively couple an outlet of the first turbine to an inlet of the second turbine when operating the turbochargers in the series configuration.

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Regarding claim 23:

instructions for operating the turbochargers in a series configuration for a first operating region by actuating a plurality of valves to couple an outlet of a second compressor to an inlet of a first compressor and to couple an outlet of a first turbine to an inlet of a second turbine; and instructions for operating the turbochargers in a parallel configuration for a second operating region."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Cui et al. (Pub. Number CN 1737346 A) disclose an adjustable high boost system with series-parallel connection of turbochargers in different size.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (571) 272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TTB
October 2, 2006


Thai-Ba Trieu
Primary Examiner
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